UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00632

July 21, 2004

Mr. R.F. Krochalis
Regional Administrator
U.S. Department of Transportation
Federal Transit Administration, Region X
915 Second Avenue
Federal Building, Suite 3142
Seattle, Washington 98174-1002

Re: Endangered Species Act Section 7 Formal Consultation and Conference, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the South Corridor Light Rail Project in the City of Portland, and Clackamas County, Oregon

Dear Mr. Krochalis:

Enclosed is a biological opinion and conference opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) that addresses the proposed funding of a project to construct two new segments of light rail tracks in the City of Portland and unincorporated Clackamas County, Oregon. The Federal Transit Administration (FTA) is sponsoring the project along with the local project partners, TriMet and Metro. Project elements include 6.5 miles of new light rail tracks beside the I-205 freeway and 1.8 miles of new light rail tracks in downtown Portland, eight new stations, five park-and-ride lots, and approximately 15.8 acres of new impervious area.

NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize the continued existence of ESA-listed Lower Columbia River (LCR) Chinook salmon (*Oncorhynchus tshawytscha*) and LCR steelhead (*O. mykiss*). As required by section 7 of the ESA, this Opinion includes reasonable and prudent measures with terms and conditions that are necessary to minimize the potential for incidental take associated with this action. NOAA Fisheries also concludes that the proposed action is not likely to jeopardize the continued existence of LCR coho salmon (*O. kisutch*), a species proposed for listing as threatened under the ESA. However, the incidental take statement does not become effective for LCR coho salmon until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. The prohibitions of the ESA do not apply to LCR coho salmon until this species is listed.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. The action area has been designated as EFH for Chinook salmon and coho salmon.

If you have any questions regarding this consultation, please contact Dr. Nancy Munn of my staff in the Oregon State Habitat Office at 503-231-6269.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Rebecca Reyes-Alicea, FTA
Elton Chang, FHWA
Dave Unsworth, Metro
Neil McFarlane, TriMet

Endangered Species Act - Section 7 Consultation
Biological Opinion & Conference Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

South Corridor Light Rail Project in the City of Portland
and Clackamas County, Oregon

Agency:	U.S. Department of Transportation, Federal Transit Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	July 21, 2004
Issued by:	Russell M Strach for _____ D. Robert Lohn Regional Administrator
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1. INTRODUCTION

1.1 Consultation History

On June 1, 2004, National Ocean and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NOAA Fisheries) received a letter dated May 27, 2004, and a biological assessment (BA) from the U.S. Department of Transportation, Federal Transit Administration (FTA), requesting formal consultation under the Endangered Species Act (ESA) on the funding of a light rail construction project in the City of Portland, Oregon and in unincorporated Clackamas County, Oregon. TriMet and Metro are local sponsors of the project, and FTA is the Federal funding partner.

FTA, in partnership with Metro and TriMet, proposes to construct the South Corridor Light Rail Project and operate new light rail alignments in two segments in Multnomah and Clackamas Counties, Oregon. These two segments are in downtown Portland, Oregon, and along the Interstate-205 Freeway (I-205), and are connected via the existing Banfield light rail alignment. In the downtown Portland segment, the light rail line would be on 5th and 6th Avenues. In the I-205 segment, 6.5 miles of light rail would be constructed beside I-205 between Gateway and Clackamas Regional Centers. The I-205 segment would include the construction of five new park-and-ride lots, six bridges across existing roadway arterials, and one bridge across Johnson Creek. This connection is intended to serve these quickly growing areas with alternative transportation choices that are a key component of Metro's 2040 land use plan that calls for maintaining the Urban Growth Boundary by increasing densities within town and regional centers.

In the BA, the FTA determined that Lower Columbia River (LCR) Chinook salmon (*Oncorhynchus tshawytscha*) and LCR steelhead (*O. mykiss*) are likely to occur within the project area and that the proposed project is "likely to adversely affect" (LAA) the listed species. There is potential for adverse effects, because the project will be constructed and operated over and beside the Willamette River in the downtown Portland segment, Johnson Creek and its tributaries, and Phillips Creek (a tributary to Mt. Scott Creek) in the I-205 segment. In addition to steelhead and Chinook salmon, LCR coho salmon (*O. kisutch*) may occur within the project area. LCR coho salmon were recently proposed for listing as a threatened species (June 14, 2004, 69 FR 33102).

References for listing status and dates, and ESA section 4(d) take prohibitions, are provided in Table 1. This biological opinion and conference opinion (Opinion) is based on the information presented in the BA and information provided during discussions with FTA, Metro and TriMet. The objective of this Opinion is to determine whether funding the construction of the light rail project is likely to jeopardize the continued existence of the ESA-listed species described in Table 1. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for coho salmon and Chinook salmon, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

Table 1. Additional Background on Listing Status, Biological Information, Protective Regulations for the ESA-Listed Species Considered in this Consultation.

Species Evolutionarily Significant Unit (ESU)	Status	Protective Regulations	Biological Information, Historical Population Trends
Chinook salmon (*O. tshawytscha*)			
Lower Columbia River	Threatened 3/24/99; 64 FR 14308	7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Steelhead (*O. mykiss*)			
Lower Columbia River	Threatened 3/19/98; 63 FR 13347	7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Coho salmon (*O. kisutch*)			
Lower Columbia River	Proposed Threatened 6/14/04; 69 FR 33102	None	NOAA Fisheries 2003

1.2 Proposed Action

1.2.1 Project Location

The project is within the Portland, Oregon urban area, within Multnomah and Clackamas Counties. The entire project is in the Willamette River basin, with the I-205 segment specifically in the Johnson Creek and Mt. Scott Creek watersheds. The project area includes two segments, one in downtown Portland that joins existing tracks at the west side of the Willamette River and one beside I-205. Within downtown Portland, new light rail tracks would be constructed between Portland State University and Union Station along 5th and 6th Avenues. From Union Station, the alignment would connect to the Willamette River Steel Bridge via a new ramp.

The I-205 segment is beside the I-205 Freeway and is generally included within the I-205 right-of-way (ROW) between I-84/I-205 (Gateway Regional Center) and SE Sunnyside Road (Clackamas Regional Center). The I-205 segment would include the construction of five new park-and-ride lots, six bridges across existing roadway arterials, and one bridge across Johnson Creek.

1.2.2 Background

A Final Environmental Impact Statement (FEIS) is being completed with FTA and the Federal Highway Administration (FHWA) as the National Environmental Policy Act (NEPA) co-Federal leads and the U.S. Army Corps of Engineers as a cooperating agency. TriMet is the lead local agency under NEPA for the design and construction of the project, and Metro is lead local agency in the preparation of the FEIS.

The proposed action is in the preliminary engineering phase of design, meaning that engineering design is 3 - 5% complete. Consequently, certain details are not yet available that are typically required to quantify and analyze the potential impacts to listed species from both the effects of construction related activities, and the effects of post-construction and operational activities. The BA evaluated the potential for effects, identified appropriate performance criteria for those project elements that are still under development, with the intent to avoid and minimize effects to the maximum extent practicable during the design process.

The South Corridor Light Rail would carry more than 33,300 rides per average weekday, would remove more than 11,000 auto trips per day, and would reduce the vehicle-miles traveled by 66,000 per day or over 3.8 million miles in a year. This reduction will result in less non-point pollution being created.

This project will connect downtown Portland with the Gateway Regional Center, the Lents Town Center, and the Clackamas Regional Center. The connection is intended to serve these quickly growing areas with alternative transportation choices that are a key component of Metro's 2040 land use plan that calls for maintaining the Urban Growth Boundary by increasing densities within town and regional centers.

1.2.3 Proposed Action

<u>Downtown Portland Segment</u>
The proposed construction in downtown Portland includes the construction of light rail tracks on 5th and 6th Avenues, and six pairs of stations. The distance between Portland State University and the Steel Bridge approach ramp is approximately 1.8 miles. A track turnaround would be constructed at SW Jackson Street. A new ramp will be constructed between the west approach to the Steel Bridge and NW Third Avenue. To construct the track, existing impervious area would be removed and replaced with an impervious trackway. No new impervious area is anticipated as a result of the South Corridor Light Rail Project within the downtown Portland segment as the area within the limits of construction work is currently impervious (concrete or asphalt). The new light rail would cross the Willamette River over an existing bridge structure.

TriMet would operate electric trains approximately every 3 minutes during the peak hours and every 5 minutes during off-peak hours. Buses, which stop every two blocks in downtown, would stop every four blocks resulting in fewer stops and less dwell- time.

The South Corridor Project will be subject to the City of Portland Bureau of Environmental Services (BES) Stormwater Manual. The manual requires the treatment of stormwater quality and quantity in the downtown Portland area. Detention of stormwater in this part of the project area would be expensive. TriMet has committed to work with BES to implement their stormwater manual through negotiations that could include various solutions such as off-site improvements and/or participation in the BES "wet weather" program.

I-205 Segment

Light rail improvements within the I-205 segment would include the construction of 6.5 miles of concrete tie-and-ballast trackway (no creosote-treated wood will be used), eight stations and five park-and-ride lots. For the first 3.1 miles (heading from north to south), the light rail alignment would be constructed on ROW set aside for high capacity transit when the Oregon Department of Transportation (ODOT) developed the I-205 Freeway (Gateway to SE Foster Rd). This reserved ROW has been cleared, grubbed, and graded to be ready for light rail improvements. The remaining 3.4 miles would be within or directly beside the ODOT ROW, generally as close to I-205 as ODOT will allow. The amount of new impervious area estimated to result from the proposed action is approximately 15.8 acres, although this could change as the project design is developed.

The majority of the new impervious surface is generated by the addition of park-and-ride lots and stations. The light rail trackway would be constructed in a manner that would allow infiltration of stormwater. Specifically, the light rail trackway would be constructed of sub-ballast with larger ballast material supporting concrete ties supporting the rails. Consistent with the precedent set on the Westside, Interstate Max, and Airport projects, this trackway is considered pervious and non-polluting.

All the proposed park-and-ride lots along I-205 would include facilities designed to provide water quality treatment of the 6-month, 24-hour storm event, consistent with the NOAA Fisheries' HCD On-line Stormwater Guidance for stormwater generated by new impervious surfaces. Vegetated water quality swales will be used either alone or in a treatment circuit with proprietary devices as the treatment facility at most locations. If site constraints limit the use of swales, the required treatment will be provided by proprietary devices.

One hundred percent of the stormwater from the design storm will be detained by infiltration of treated stormwater in underground injection wells (drywells) designed in accordance with the Oregon Department of Environmental Quality (DEQ) standards. Should site conditions limit the use of drywells in some locations, TriMet will provide detention in accordance with guidelines and dispose of stormwater to municipal systems in accordance with their requirements. In addition, numerous trees and shrubs will be planted within and around each park-and-ride lot, to provide cooling shade and increase evapotranspiration, with the exception of the structured lot at Clackamas Town Center.

In addition to trackways, bridges, light rail stations and park-and-ride lots, TriMet would require a number of small system buildings to provide electric propulsion power to the light rail

system and to provide signal and communications for the system. Stormwater would flow off of the roofs of these buildings and be infiltrated in soakage trenches. Driveways to access these buildings would be constructed using pervious paving materials. TriMet will also need to expand operating and maintenance facilities at Ruby Junction near SE 200th Avenue on the Eastside Light Rail line and Elmonica near SW 170th Avenue on the Westside Light Rail Line. These improvements would include the addition of concrete tie-and-ballast trackway and some minor additions to existing buildings.

SE Main Street Station and Park-and-Ride Lot

At SE Main Street and SE 96th Avenue, a 424-space surface park-and-ride lot and a light rail station consisting of a center platform and shelters would be constructed. This area is maintained as grass. This park-and-ride lot would include water quality swales designed to treat the 6-month, 24-hour storm event stormwater. Drywells would be designed to provide adequate infiltration of stormwater. The station and park-and-ride lot would result in 0.2 acres and 2.9 acres of new impervious surface, respectively. More than 70 trees and hundreds of shrubs would be planted within and around the Main Street park-and-ride lot.

Division Street Station

The next station moving south along the alignment would be at SE Division Street and would create less than 0.1 acres of new impervious surface. Stormwater would run off the shelters onto the light rail platforms. The light rail platforms would be constructed with sand set pavers allowing for stormwater infiltration. Excess water would sheetflow onto the adjacent grassy area or the trackway. No connection to stormwater systems is anticipated. This approach will be used at all of the I-205 segment stations that would not have associated parking lots.

Powell Boulevard Station and Park-and-Ride Lot

Further south, the alignment would cross over SE Powell Boulevard on a new bridge. Stormwater from the bridge would be collected, treated and infiltrated in a drywell or soakage trench. Stormwater falls onto SE Powell Boulevard and is untreated before entering the municipal stormwater system. The Powell Bridge includes less than 0.1 acres of new impervious area.

The second park-and-ride lot, near Powell Boulevard, would include spaces for 400 automobiles. Stormwater would be collected and treated in water quality swales and/or proprietary devices before being infiltrated in a drywell system. This area is planted as grass and is maintained by ODOT. The park-and-ride lot would result in approximately 2.8 acres of new impervious area and the associated station would result in 0.3 acres.

Holgate Boulevard Station and Park-and-Ride Lot

The Holgate Station would include a 125-space surface park-and-ride lot and would result in 0.1 and 1.1 acres of new impervious pavement, for the station and lot respectively. Stormwater would be collected, treated and infiltrated in a drywell system. This existing grass area is maintained by ODOT. Trees would be planted around, and within, the park-and-ride lot.

South of the Holgate Station, the light rail alignment would cross over SE Harold Street on a new bridge structure. Stormwater falls onto SE Harold Street and enters the stormwater system without treatment. The light rail bridge would result in 0.05 acre of new impervious area. Stormwater would be collected, treated and infiltrated in a drywell or a soakage trench system.

Foster Road Station and Park-and-Ride Lot

The Foster Road Station would include a 150-space park-and-ride lot near Lents Town Center. The area being considered for a park-and-ride site is being used for existing parking lots and buildings. The proposed park-and-ride would increase impervious area by approximately 0.9 acres and the station would add 0.6 acres. Stormwater would be collected and treated in swales and infiltrated in a drywell system. Shrubs and trees would be planted in and around the park-and-ride lot. Stormwater falling on the existing impervious area is untreated.

Flavel Street Station

The light rail alignment would cross over SE Woodstock and SE Flavel Streets on new bridge structures that would also include an ODOT bike path. Most of the area below the bridge is already impervious roadway and parking lots with stormwater flowing untreated to the existing stormwater system. As part of the proposed action, stormwater would be collected from the new structure, treated and infiltrated in a soakage trench or drywell system or combination. This bridge would increase impervious area by 0.2 acres.

The rail line would cross the existing Springwater Trail on a new bridge. The area below the bridge includes an asphalt path with adjacent grassy area. The new structure would result in 0.05 acres of new impervious area. Stormwater would be treated in swale or infiltrated in drywell or soakage trench.

At the proposed new station near SE Flavel Street (Flavel Street Station) stormwater would be treated in a similar manner to other stations and would result in 0.1 acre of new impervious area. South of the Flavel Street Station, the light rail alignment location would require that an ODOT-owned and maintained concrete-lined stormwater conveyance ditch be modified. Stormwater from the I-205 Freeway would be placed in a new pipe and would be conveyed to an existing pipe or relocated outfall on the south bank of Johnson Creek. This modification is described in more detail below. Additional water quality treatment and quantity attenuation for runoff from I-205 beyond what currently exists is not proposed as part of this project at this location due to physical space and funding constraints. The proposed action does not preclude ODOT from retrofitting this site for additional stormwater treatment in the future.

Stormwater from the proposed new light rail bridge across SE 92nd Avenue (just south of the Flavel Street Station) would be collected and pre-treated in a mechanical device or vegetated swale, and either infiltrated (as space allows), or connected to an existing municipal storm conveyance system under SE 92nd Avenue that would outfall to Johnson Creek. Stormwater from the section of SE 92nd Avenue that would be covered by the new bridge is untreated before it is collected and conveyed to Johnson Creek. The proposed bridge structure would result in

approximately 0.2 acre of new impervious area. However it would be built in part over existing impervious surface at SE 92nd Avenue.

Further south, the alignment would cross over Johnson Creek Boulevard on a new bridge that would result in 0.8 acre of new impervious area. Stormwater would be collected and pre-treated in a vegetated swale and infiltrated in a drywell or soakage trench system.

Johnson Creek Bridge

The proposed light rail alignment would cross over Johnson Creek on a new bridge(s) to be perpendicular to the stream. This crossing could be accommodated by either a single bridge, approximately 32 feet wide, or with two 18-foot wide bridges. In either case, the bridge will be designed to have 2 feet of freeboard above the Federal Emergency Management Agency (FEMA) 100-year floodway elevation and would be approximately 120 feet in length. A potential benefit of two bridges as opposed to one would be the ability to daylight the riparian and near-shore areas under the bridges, allowing for more native vegetation to grow than would under the low-light conditions of a single span bridge.

Although it is understood that the ordinary high water mark (OHWM) of Johnson Creek in this location has little functional meaning because of existing conditions, including highly altered hydrology from urbanization and the 70+ year-old concrete lining, efforts to avoid and minimize impacts from bridge design and construction have been incorporated into the proposed action. These minimization measures include a bridge design that would not place piers, bents, footings or bridge supports below the OHWM of Johnson Creek, and avoiding and minimizing impacts to the FEMA 100-year floodplain that could occur during construction. Additional bridge design detail will be determined in the Preliminary Engineering phase and performance criteria will be based in part on providing the best environmental solution.

A pre-cast bridge design will be used to avoid in-water construction. It is not anticipated that in-water work would be required to complete the new bridge, however, because of the early-design stage of the proposed action and the nature of the design-build process, in-water work isolation and fish salvage may be needed. The Oregon Department of Fish and Wildlife (ODFW) defined in-water work period for Johnson Creek as June 1 to August 31 (ODFW 2000). In the event that in-water work is unavoidable, in-water construction would be limited to the approved ODFW in-water work window. Construction work would occur over and beside Johnson Creek outside the in-water work period. Pilings may or may not be required.

The existing banks of Johnson Creek were hardened with concrete in the 1930s and very little native vegetation exists in this location. Stormwater treatment in this part of the proposed action is mixed; a portion of the area includes stormwater conveyance occurring in vegetated swales that would allow for some infiltration and unquantifiable water quality treatment, and some untreated areas that would sheetflow or would be conveyed directly into Johnson Creek.

As the proposed light rail alignment approaches Johnson Creek, the location of the light rail alignment would require removing an existing concrete-lined ditch. This ditch conveys

stormwater from I-205 to Johnson Creek. As part of the proposed action, approximately 1.5 acres of stormwater coming from the ODOT ROW (I-205) would be treated in a new swale constructed between the light rail line and the relocated bike path. This swale would be sized to treat the 6-month, 24-hour water quality storm event, and would result in a limited amount of infiltration. The construction of the new swale and removing the concrete-lined ditch would create a net gain of 0.4 acres of new pervious area over the existing conditions near Johnson Creek. The remainder of the stormwater from ODOT's I-205 Freeway would be collected in new piping and conveyed untreated to existing or potentially relocated outfalls on Johnson Creek. Additional attenuation of water quantity from ODOT's I-205 Freeway in this location would be difficult and costly because of limited physical space due to existing development, the very clayey soils and high water table. This area is also mapped as being in or very near the FEMA 100-year floodplain.

Fuller Road Station and Park-and-Ride Lot

The park-and-ride lot at Fuller Road is a 628-space surface facility that would be west of SE Fuller Road between SE Otty Road and SE Johnson Creek Boulevard. Stormwater design for this park-and-ride would be similar to the other park-and-ride lots. Stormwater would be collected, treated (likely requiring swales in combination with proprietary devices) and infiltrated in drywells. This area includes approximately 12 single-family residences with associated driveways and structures. The new impervious surface area created by this new facility would be 4.4 acres.

As a part of recent expansion of the I-205 Freeway, ODOT constructed a stormwater quality treatment facility along the west side of the freeway ("ODOT Swale"). As a consequence of the proposed construction, this facility would be displaced. The lost function would be replaced through mitigation. A location on the east side of the northbound I-205 Freeway lanes just south of SE Otty Road has preliminarily been identified for a potential in-kind replacement of this facility. Stormwater would sheetflow from the freeway lanes, be treated through a new vegetated swale, detained and then conveyed to Phillips Creek through an existing stormwater conveyance pipe. If site conditions limit in-kind replacement, FTA and its partners will investigate replacement of this function within the Phillips Creek watershed, or replacement of this function in the Mt. Scott watershed in coordination with NOAA Fisheries staff.

Clackamas Regional Center Transit Center

The southern-most park-and-ride lot would be at the Clackamas Town Center, a 90-acre shopping center and parking facility with no stormwater treatment. Runoff from the existing facility is conveyed into Phillips Creek. The new park-and-ride facility would include a 500-space structured garage with a transit center on the first floor. Stormwater from the roof of this structure would be collected, treated with stormwater planters and/or in combination with proprietary devices and infiltrated in a drywell system. If soil conditions do not allow infiltration, then the required detention would be provided on site, and flows directed to an existing stormwater conveyance system that connects to Phillips Creek. The new facility would result in approximately 0.7 acre of new impervious area as a result of the station and park-and-ride lot, but would provide treatment of 2.0 acres for a net gain in water quality and quantity

treatment. As a result of the proposed action, there would be a net gain of 1.3 acres of treated impervious surface at this site.

1.2.4 Proposed Conservation Measures

FTA proposes to use a combination of best management practices (BMPs) to avoid and minimize impacts to sensitive natural resources during construction. These BMPs are included in Appendix B of the BA, and are based on the programmatic consultation biological opinion for the U.S. Army Corps of Engineers (COE) Standard Local Operating Procedures for Endangered Species II (SLOPES II). In addition, activities will comply with the City of Portland BES Erosion Control Manual. FTA will provide photo documentation of the construction and operation of the proposed water quality and detention facilities. TriMet will also monitor these improvements, including the plantings, for a period of 5 years.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The Willamette River serves as a migration corridor for the listed Chinook salmon and steelhead evolutionarily significant units (ESU) and the proposed coho salmon ESU under consideration in this Opinion. Project activities are unlikely to directly affect fish in the Willamette River, although indirect effects may occur through changes to water quality and hydrology as a result of new impervious surface. The project area includes Johnson Creek, a tributary to the Willamette River, and Phillips Creek, a tributary of Mt. Scott Creek which also flows into the Willamette River via Kellogg Creek. Johnson Creek in the project vicinity provides migratory habitat for steelhead and coho salmon, and may also serve as a feeding and rearing area for sub-yearling Chinook and coho salmon, and steelhead. Essential features of the area for the species are: (1) Substrate; (2) water quality; (3) water quantity; (4) water temperature; (5) water velocity; (6) cover/shelter; (7) food (juvenile only); (8) riparian vegetation; (9) space; and (10) safe passage conditions (see 65 FR 7764). The proposed action within the action area serves as a rearing and migration area for listed species considered in this Opinion. The essential habitat features that the proposed project may affect are substrate, water quality, water quantity, cover/shelter and food (juvenile), riparian vegetation, and safe passage conditions.

References for further background on listing status and biological information and critical habitat can be found in Table 1. According to a recent draft of "Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead," drafted by the West Coast Salmon Biological Review Team (BRT), a number of ESUs were determined by the majority of the BRT as "likely to become endangered in the foreseeable future" including LCR

Chinook salmon, LCR steelhead, and LCR coho salmon (NOAA Fisheries 2003). Biological information for each listed ESU considered in this Opinion are discussed below.

Lower Columbia River Chinook

LCR Chinook salmon includes both fall-fun and spring-run stocks. Adults migrating to the Clackamas River may be present in the lower Willamette River starting in August and continuing through November, with peak migration occurring in September and October. Juveniles in this ESU would be expected in the lower Willamette River starting in March, continuing through July, with the peak occurring in April, May and June.

Threats to Chinook spawning and rearing habitat in the LCR ESU continue to be habitat degradation and loss due to extensive hydropower development projects, urbanization, logging, and agriculture.

Chinook salmon probably enter Johnson Creek to spawn during mid-September through October. Fry emerge from gravels in January or February. Unlike steelhead or coho salmon, Chinook salmon only spend a few weeks near spawning grounds before migrating to the ocean, and they are usually out of Johnson Creek by June. It is likely that most Chinook salmon found in the Johnson Creek system are either strays or fish seeking refuge from high flows in the Willamette River.

Phillips Creeks supports fall Chinook salmon in the lower reaches.

Lower Columbia River Steelhead

Based on the updated information provided in the BRT report (NOAA Fisheries 2003), the information contained in previous LCR status reviews and preliminary analyses, the number of historical and currently viable populations have been tentatively identified. Like the previous BRT, the current BRT could not conclusively identify a single population that is naturally self-sustaining. Over the period of the available time series, most of the populations are in decline and are at relatively low abundance. No population has a recent mean greater than 750 spawners. In addition, many of the populations continue to have a substantial fraction of hatchery origin spawners.

LCR steelhead move through the action area throughout the year. Peak movement is expected from late April through May. In Johnson Creek, winter-run adult steelhead return to spawn from mid-November through May. Two separate runs appear to peak in January/February, and again in April/May. Eggs or salmon fry can be present in the gravel from December to July. Juveniles can remain in Johnson Creek for one to two years before migrating as smolts to salt water. Steelhead are likely to use the mainstem Johnson Creek and tributaries.

Both winter and summer steelhead have been documented in Phillips Creek.

Lower Columbia River Coho Salmon

The BRT recently reviewed the status of the LCR coho salmon (NOAA Fisheries 2003). In the previous review concluded in 2001, the BRT was very concerned that over 90% of the historical populations in this ESU appeared to be extirpated or nearly so. The two populations with any significant production (Sandy and Clackamas) were at appreciable risk because of low abundance, declining trends, and failure to respond after a dramatic reduction in harvest. The most recent review was completed in 2003. Information collected for the review indicated that the ESU is dominated by hatchery-origin spawners, but there are some potential pockets of natural production. Johnson Creek is not specifically discussed in the review, but is included as part of the Clackamas population. The BRT agreed with earlier conclusions that only two populations have demonstrated appreciable levels of natural production, and added that both have experience recruitment failure over the last decade. From the 2001 review, there is only very limited information on the remainder of the 21 populations, but most were considered extirpated, or nearly so, during the low marine survival period of the 1990s. However, recently-initiated spawner surveys by ODFW and juvenile outmigrant trapping by Washington Department of Fish and Wildlife indicate there is some natural production in the Lower Columbia River. Unfortunately, the majority of populations remain dominated by hatchery-origin spawners, and there is little data to indicate they would naturally persist in the long term (NOAA Fisheries 2003).

Historically, coho salmon were observed in the lower reaches of Johnson Creek and Crystal Springs Creek from late September through early November. Eggs or fry could be in the gravels between October and March. Fry attempt to establish territories and remain in streams as juveniles for one to two years before smolts migrate to the sea. Both juvenile and adult coho salmon have been observed in Johnson Creek.

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations combined with the Habitat Approach (NMFS 1999): (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species and whether the action is consistent with the available recovery strategy; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors is likely to appreciably reduce the likelihood of species survival in the wild or destroy or adversely modify critical habitat. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that are relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration and rearing. Listed Pacific salmonid survival in the wild depends on the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while removing adverse impacts of current practices. The current status of the listed species covered by this Opinion, based on their risk of extinction, has not significantly improved since they were considered for listing.

2.1.4 Environmental Baseline

In step 2 of NOAA Fisheries' analysis, we evaluate the relevance of the environmental baseline in the action area to the species' current status. The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined by NOAA Fisheries regulations (50 CFR 402.02) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area for this project, therefore, includes the water column, streambed, and banks of Johnson Creek from the upstream extent of construction activities, downstream to the extent of visible turbidity resulting from construction activities (approximately 100 feet downstream from the disturbance area). The action area also includes Veterans Creek, Phillips Creek from I-205 until its confluence with Mt. Scott Creek, and the Willamette River from downtown Portland to the Steel Bridge. While in-water work is not required for the downtown Portland activities and no new impervious surface will be required, water quality in downtown Portland is very poor and drains directly to the Willamette River. Water quality of the stormwater runoff does not meet the biological requirements of listed salmonids in the Willamette River, and the proposed action in downtown Portland has the potential to continue the existing trend. Consequently, the action area is within the Willamette River basin, and the Johnson Creek watershed and the Mt. Scott Creek watershed. The environmental baseline conditions in these areas are described below.

Willamette River Basin

The Willamette River basin covers approximately 11,500 square miles in northwest Oregon between the Coast and Cascade mountain ranges. The river travels 187 miles from its headwaters to its mouth at the Columbia River. Most of the rainfall occurs in the fall, winter, and spring, with little rainfall during June, July, and August. The lowest river flow occurs during late summer. The 13 COE dams on tributary systems largely regulate flows in the mainstem Willamette River.

Significant changes have occurred in the watershed since the arrival of Europeans in the 1800s. The watershed was mostly forested land before the arrival of white settlers. Now, about half the basin is still forested. One-third of the basin is used for agriculture, and about 5% is urbanized or is in residential use. The river receives direct inputs from treated municipal wastes and industrial effluents. Nonpoint source input from agricultural, silvicultural, residential, urban and industrial land uses are also significant, especially during rainfall runoff.

The Willamette River, from its mouth to Willamette Falls, is on the 1998 DEQ 303(d) list as water quality limited for the following parameters: Temperature (summer), bacteria, biological criteria (fish skeletal deformities), and toxics (mercury in fish tissue). Results from DEQ ambient monitoring data indicate that 68% of the values at RM 7, and 61% of the values at rivermile 13.2 collected during the summer exceed the temperature standard of 68°C. Sediment conditions in the Willamette River watershed range from excellent in some of the upper tributaries to poor in much of the mainstem of the river (Altman *et al.* 1997). In the lower Willamette River, average turbidity levels tend to be higher in fall and winter. Monthly average turbidity ranges from 4 to 149 nephelometric turbidity units (NTUs).

In 1997, DEQ and the U.S. Environmental Protection Agency (EPA) took sediment samples within the Portland Harbor. The results of the study indicated that sediments in the harbor, contain concentrations of metals, polychlorinated biphenols (PCBs), pesticides, herbicides, dioxins/furans, tributyltin (TBT), and polynuclear aromatic hydrocarbons (PAHs) above EPA contaminant guidelines. Cleanup of the contaminated sediments is presently being addressed under the Federal Superfund process. In addition, the skeletal deformities in fish upstream of Willamette Falls suggests that there may also be chemical contamination upstream of the Portland Harbor area that make these fish more susceptible to parasites.

As part of the Remedial Investigation (RI) for the Portland Harbor Superfund, a group of potentially liable parties (the Lower Willamette Group) along with DEQ and EPA, have been investigating the physical, chemical and biological characteristics of the Portland Harbor. At least two more years of data collection will be conducted before completion of the RI for the Portland Harbor. Past and current stormwater discharges to the Willamette River are being investigated for their role in the poor conditions in the harbor.

Habitat conditions within the lower Willamette River are highly degraded. The streambanks have been channelized, off-channel areas removed, tributaries put into pipes, and the river has been disconnected from its floodplain as the lower valley was urbanized. Silt loading to the

lower Willamette River has increased over historic levels due to logging, agriculture, road building, and urban and suburban development within the watershed. The river in the project area has a soft bottom, with little or no aquatic vegetation. Limited opportunity exists for large wood recruitment to the lower Willamette River due to the paucity of mature trees along the shoreline, and the lack of relief along the shoreline to catch and hold the material. The banks of the river in the action area are heavily industrialized, with much of the bank hardened with riprap, vertical concrete walls, and docking facilities. Much of the historic off-channel habitat has been lost due to diking and filling of connected channels and wetlands. Columbia Slough, downstream from the project site, is the closest remaining off-channel habitat. Connections between the slough and the river have been cut off, and dikes have been constructed along much of the slough.

In addition to the previously discussed salmonids, sockeye salmon, American shad, and white sturgeon occur in the lower Willamette River. Cutthroat trout are also present, but their abundance is low. Both juveniles and adults use the lower Willamette River as a migratory corridor and as rearing habitat for juveniles. Historically, Willamette Falls was impassable to fall Chinook salmon, coho salmon, chum salmon, and cutthroat trout. Only steelhead and some spring Chinook salmon were known to ascend the falls. Fish passage facilities were constructed at the falls in the early 1900s, and were upgraded in 1971, however, the passage facilities are inefficient, and delay upstream migration.

The City of Portland and ODFW have completed a four-year study to evaluate relationships between fish communities and waterway developments. Three years of the collected data have been analyzed and are discussed here (ODFW 2003). Juvenile salmonids are present in the lower Willamette River during every month sampled. In both sampling years, the abundance of all juvenile salmonids increased beginning in November, peaked in April, and declined to near zero by July. Some of the larger juveniles may spend extended periods of time in off-channel habitat. Mean migration rates of juvenile salmonids ranged from 2.7 km/day for steelhead to 8.6 km/day for sub-yearling chinook salmon. Residence time in the lower Willamette River ranged from 4.9 days for chinook to 15.8 days for steelhead. Catch rates of juvenile salmonids were significantly higher at sites composed of natural habitat (*e.g.*, beach, rock) and alcoves. Juvenile salmonids tended to move along the east bank of the river.

Johnson Creek Watershed

Johnson Creeks flows 25 miles from the headwaters to its mouth at rivermile 18 of the Willamette River. The headwaters flow through undeveloped open space and agricultural lands before reaching the urbanized reaches of the lower river, including the project area. Factors that limits salmon use in Johnson Creek include siltation of spawning beds from construction and logging runoff, physical alteration of instream habitat, channelization, degradation of riparian habitat, increased water temperatures, discharge of untreated or poorly treated stormwater runoff, changes to hydrology, and the presence of man-made fish passage barriers.

A major issue in this watershed has been flooding, which has been exacerbated by development in the floodplain, channelization of the river in the 1930s by public works projects, and

increased imperviousness of the watershed. Riparian corridors are typically narrow and consist primarily of sapling trees, mature shrubs, and native and non-native herbaceous species. Large tracts of forested areas are uncommon and occur primarily in the upper watershed. Water quality in Johnson Creek is poor and the creek is water quality limited for fecal coliform, dichlorodiphenyltricholorethane (DDT), dieldrin, PCBs, and PAHs, chlordane and summer temperature (DEQ 2002). DEQ is developing a total maximum daily load (TMDL) for Johnson Creek. The TMDL is scheduled to be completed with the rest of the Willamette River TMDLs in 2004.

As a response to the 303(d) water quality listings and the ESA listings, the jurisdictions within this watershed have jointly developed a plan for restoration which includes removal of fill and structures in the floodplain and restoration of instream habitat. The plan identifies future remedial actions within each reach of Johnson Creek.

Within the project area, Johnson Creek is confined in its channel by steep banks that are fully lined with concrete. The concrete lining was placed in the 1930s for flood and erosion control and to 'fix' the channel location. The rebar-reinforced concrete appears to be four to six inches think, and soils have accumulated on top of the concrete lining at varying depths. Sparse willows are growing in some of the soils on top of the concrete lining. There is a bench of accumulated soil at top of the concrete bank that has developed some wetland characteristics. Native woody plants were recently installed and non-native species removed as part of the ongoing efforts by the City of Portland to restore functions to Johnson Creek.

The channel width in the project area is approximately 65 feet, with an average depth of 2 to 3 feet. Riparian vegetation is limited and provides no shade to the creek.

A tributary to Johnson Creek, Veterans Creek, would be intersected by the proposed rail alignment. Veterans Creek enters Johnson Creek just east of the I-205 bridge via a corrugated metal pipe culvert with an outfall approximately two feet above the streambed. Veterans Creek originates in springs and small ponds on Mt. Scott, less than 0.75 miles upstream from Johnson Creek.

Mt. Scott Creek Watershed

Phillips Creek is within the Mt. Scott Creek sub-watershed, entering Mt. Scott Creek after crossing under SE 82nd Avenue, just north of the Southern Pacific Railroad line. Mt. Scott Creek originates in an area known as the Boring Lava Domes. Mt. Scott and Mt. Talbert are prominent features of this geologic formation. The watershed drains 9.26 square miles of hilly terrain in the east and valley lowlands to the west. The upper half of the basin drains about 1,000 acres, which consists of a combination of private land, suburban greenspace, and some agricultural land. The lower half of the watershed is residential and heavy industrial, with a very narrow riparian fringe along Mt. Scott Creek.

Phillips Creek flows into Mt. Scott Creek just west of 82nd Ave. Between I-205 and 82nd Ave, one branch of Phillips Creek is in a culvert as it flows under the Clackamas Town Center. The

main branch of Phillips Creek flows west of the Clackamas Town Center, and the creek is restricted from its floodplain by severe downcutting and impervious surfaces at or near the top of both sides of the creek bank in several areas. The active channel width is approximately 23 feet, with low to moderately graded banks that are reinforced at road crossings. Riparian vegetation upstream of SE McBride Street consists of young deciduous trees and shrubs extending less than half the active channel width that provide moderate shade, while downstream from SE McBride, vegetation is limited to shrubs and grass, Himalayan blackberry and other non-native species. Habitat quality is very poor with the gravels embedded with fine sediments, and few pools. Average water depth is less than one foot.

No passage barriers exist at the SE 80th and McBride Street crossing. However, low summer flow may impede fish passage. The culvert under SE 82nd Avenue downstream likely presents a barrier to fish passage. Phillips Creek was listed in 2002 for fecal coliform on the DEQ 303(d) List of Water Quality Limited Water Bodies.

Based on this information as well as information in the BA, the environmental baseline within the action area is not adequate to meet the needs of migrating or rearing salmonids.

2.1.5 Effects of Proposed Action

In step 3 of the jeopardy analysis, NOAA Fisheries evaluates the effects of the proposed action on listed fish and their habitat.

Effects to Chinook salmon are not expected. Chinook salmon have not been observed in the project reaches of Johnson Creek, Veterans Creek or Phillips Creek, and water temperature and low flows during the summer work period would likely preclude their presence. The greatest potential for effect is associated with the expected increased turbidity from in-water work at Johnson Creek (which may not be necessary); however, even this scenario is unlikely because turbidity would likely dissipate to background before reaching the lower reaches of Johnson Creek where Chinook salmon presence is more likely.

However, adverse effects to steelhead are expected because adult and juvenile steelhead have been observed in the project reach of Johnson Creek, and juveniles may be present during the summer work period. Effects to coho salmon are less likely because of their low level of occurrence in Johnson Creek and the other project streams. The proposed action is reasonably likely to cause take of ESA-listed species due to disturbance and an increase in turbidity during in-water work or work beside Johnson Creek, Veterans Creek and Phillips Creek, and degraded water quality and hydrology through increased impervious area.

Short-Term Effects of Construction

Project activities in downtown Portland will not affect habitat in the lower Willamette River and will not affect water quality or hydrology over the short term. Project activities will not occur within the riparian area of the Willamette River, and erosion control strategies will be effective

at keeping sediment out of the Willamette River including direct runoff and runoff through the City of Portland stormwater pipes.

The effects of the proposed construction activities on the Johnson Creek sub-watershed (including Veterans Creek) and the Mt. Scott Creek watershed (Phillips Creek) are expected to be limited to temporary, local, and will result in no long-term change to the environmental baseline.

At the current level of project design, FTA does not know whether in-water work will be required in Johnson Creek. The current plans show that the bridge bents are outside of the wetted channel but within the riparian zone. As the design develops, bridge bents may be required within the wetted channel. If this is needed, the in-water work area will be isolated and fish salvaged from the isolation area. Any listed fish that is salvaged would experience high stress with the possibility of up to 5% delayed mortality rate depending on the rescue method. Fish handling will only occur if in-water work is required, and will be very limited in spatial extent. Consequently, the effects are not expected to be significant over the long term.

The footprint of the proposed action is large and dispersed across the landscape. Most of the land-disturbing activities will take place away from creeks and riparian areas. For these areas, the likelihood of increased turbidity in streams would be low because of the incorporation of BMPs such as the development and implementation of an erosion control plan. However, in three locations the land-disturbing activities will be beside streams. For Veterans Creek and Phillips Creek, listed salmonids are not expected to be present in the action area, therefore the potential for turbidity effects is extremely low. The possibility for effects is much greater in Johnson Creek which provides habitat to listed LCR steelhead and LCR coho salmon within the project area, and habitat for LCR Chinook salmon downstream from the project area. Despite good erosion controls, increased turbidity in Johnson Creek is expected during project activities such as clearing and grubbing of vegetation in the riparian area, pile driving in the riparian area, and auguring of piles to support the pile cap, also in the riparian area. The risk of turbidity increases dramatically if in-water work in Johnson Creek is required to build the bridge. The downstream extent of increased turbidity will be limited because the low flow conditions will minimize the sediment transport capacity of the creek. Furthermore, the project design was developed to minimize turbidity increases through erosion control BMPs. Potential effects from project-related increases in turbidity on LCR steelhead and LCR coho salmon include, but are not limited to: (1) Reduction in feeding rates and growth; (2) increased mortality; (3) physiological stress; (4) behavioral avoidance; (5) reduction in macroinvertebrate populations; and (6) temporary beneficial effects. Potential beneficial effects include a reduction in piscivorous fish/bird predation rates, enhanced cover conditions, and improved survival conditions.

At moderate levels, turbidity can reduce primary and secondary productivity and, at high levels, turbidity can interfere with feeding and can injure and kill both adult and juvenile fish (Spence *et al.* 1996, Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and

Northcote 1985). Fine, redeposited sediments can also reduce primary and secondary productivity (Spence *et al.* 1996), and reduce incubation success and interstitial rearing space for juvenile salmonids (Bjornn and Reiser 1991). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, except when the fish must traverse these streams along migration routes (Lloyd *et al.* 1987). In contrast, turbid water can provide cover and refuge from predation from piscivorous fish and birds (Gregory and Levings 1998). In habitats with intense predation pressure, this provides a beneficial trade-off of enhanced survival in exchange for physical effects such as reduced growth.

Exposure duration is a critical determinant of whether turbidity causes physical or behavioral effects and the extent of those effects (Newcombe and MacDonald 1991). Salmonids have evolved in waters that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with floods, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids appear to be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Resiser 1991). However, chronic exposure can cause physiological stress that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Increases in suspended sediment can adversely affect filter-feeding macroinvertebrates and fish feeding. At concentrations of 53 to 92 parts per million (ppm) (24 hours) macroinvertebrate populations were reduced (Gammon 1970). Concentrations of 250 ppm (1 hour) caused a 95% reduction in feeding rates in juvenile coho salmon (Noggle 1978). Concentrations of 1200 ppm (96 hours) killed juvenile coho salmon (Noggle 1978). Concentrations of 53.5 ppm (12 hours) caused physiological stress and changes in behavior in coho salmon (Berg 1983, cited in Newcombe and Jensen 1996).

Johnson Creek is not properly functioning for sediment and turbidity. Over the long term, the proposed action will maintain this parameter. As stated above, elevated turbidity from construction activities is expected in the work area and downstream from the work area. The high clay content soils increase the likelihood that fine sediments would harm habitat in Johnson Creek. These increases in turbidity are likely to increase physiological stress and displace rearing juveniles. Since salmon actively avoid waters that are chronically turbid, adverse effects are less likely after the initial exposure; however, repeated pulses of turbidity that persist over a period of days or weeks may displace rearing salmon for longer periods, possibly reducing survival. While Johnson Creek within the project area provides little in the way of habitat for LCR steelhead and LCR coho salmon, there is potential for yearling and sub-yearling steelhead and coho to be present. The sub-yearling fish are more vulnerable, because yearling fish are better at tolerating turbid water. Both are vulnerable to increased physiological stress and potentially physical injury such as gill abrasion. Therefore, adverse effects related to turbidity are more likely for juvenile LCR steelhead and LCR coho salmon. The effects would be in the form of physiological stress and displacement, with the potential for reduced survival.

As with all construction activities, accidental releases of fuel, oil, and other contaminants may occur. Operation of the excavators, back-hoes, and other equipment requires the use of fuel, lubricants, and other substances which, if spilled into a waterbody or in the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain polycyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Fresh concrete spilled into an aquatic environment can result in a dramatic shift in the pH, and can result in lethal exposures to aquatic organisms.

Long-Term Effects of the Proposed Action

The effects of the 15.8 acres of new impervious areas are likely to result in long-term effects to streams in the action area from untreated and unattenuated stormwater (Paul and Meyer 2001, Booth and Jackson 1997, Richey 1982). These effects include:

- Increased frequency and severity of flooding;
- accelerated channel erosion and rates of sediment transport;
- alteration of streambed substrate size and composition;
- reduced base flow;
- alteration of energy inputs to streams;
- alteration of the natural temperature regime; and
- increased level of pollutants.

The effects of increased impervious area are often exacerbated by the loss of riparian forests and floodplains, which cause a decrease in evapotranspiration and increased surface runoff (Schueler 1994). The physical and chemical changes result in declines in healthy microbial and invertebrate communities (Klein 1979), and a reduction in fish diversity (Lichatowich 1999). Even with adequate habitat, water quality may not be suitable for a healthy biological community. In the last decade, the scientific community has worked to devise strategies to minimize the effects of growth and development on urban streams and watersheds (Horner and May 1999, Hager 2003). Low-impact development (LID) approaches treat rainfall on-site by attempting to integrate stormwater treatment into the site and building design to maintain hydrological function and water quality across the watershed. LID attempts to model nature and match predevelopment hydrology through infiltrating, storing, filtering, evaporation, and detaining runoff. Essentially, the pre-development patterns are matched after development for rainfall pathways for surface runoff and infiltration to supply low summer flows through increased vegetation and enhanced opportunities for infiltration.

FTA has incorporated LID design elements into the proposed action to avoid and minimize the effects caused by the new impervious areas (parking lots, access roads, stations). These include:

- Pre-treatment and infiltration of 100% of the new impervious areas.

- Where 100% infiltration is not possible because of physical limitations (*e.g.*, soil conditions, space constraints), stormwater will be pretreated and detained before release into the receiving water.
- Treatment of existing untreated impervious areas where practicable, which will amount to approximately 5.6 acres of existing pavement. Combined with proposed treatment of new impervious surface, FTA proposes to treat approximately 135% of the new impervious area.
- Planting trees and shrubs along Johnson Creek and within the proposed parking lots.

FTA has also committed to working with the City of Portland to improving water quality in downtown Portland, most likely through the implementation of innovative strategies for treating stormwater. The treatment of stormwater could occur along the light rail alignment, or in other parts of lower Willamette River watershed affected by stormwater.

The new park and ride lots will be constructed using LID design elements (pervious pavement, swales, trees and shrubs), which will significantly reduce the potential for effects to hydrology and waterquality. By treating 135% of the new impervious area and incorporating a large number of plantings into the design, FTA and their partners may have a net benefit to watershed function over the long term.

2.1.6 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." This is step 4 in NOAA Fisheries' analysis process. Future Federal actions ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater impacts to listed species than presently occurs. Current trends in land use will continue with population growth expected in the headwaters of Johnson Creek and Mt. Scott Creek. The new residential developments will add to the total impervious area of the sub-watersheds, thus potentially contributing to declining water quality and altered hydrologic regimes. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years**.**

2.1.7 Conclusion

The final step in NOAA Fisheries' approach to determine jeopardy is to determine whether the proposed action is likely to appreciably reduce the likelihood of species survival or recovery in the wild. NOAA Fisheries has determined that when the effects of the proposed action addressed in this Opinion are added to the environmental baseline and cumulative effects

occurring in the action area, it is not likely to jeopardize the continued existence of listed LCR Chinook salmon and LCR steelhead, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects.

These conclusions are based on the following considerations: (1) Any in-water work is expected to be minimal and conducted during the summer in-water work window when salmonid presence is low in the Johnson Creek project area; (2) performance standards are proposed to limit turbidity increases; (3) the project design includes elements that will treat and detain stormwater, thus minimizing the potential for affects due to increased impervious area; (4) the proposed plantings will help retain the natural hydrologic regimes in the streams crossed by the proposed light rail alignment; and (5) the proposed action is not likely to impair properly functioning habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

In this Opinion, NOAA Fisheries also concludes that the proposed action is not likely to jeopardize the continued existence of LCR coho salmon which are proposed for listing as threatened under the ESA. As required by section 7 of the ESA, NOAA Fisheries has included an incidental take statement with reasonable and prudent measures and nondiscretionary terms and conditions that are necessary to minimize the impact of incidental take associated with this action. However, the incidental take statement does not become effective for LCR coho salmon until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply to this proposed species.

2.1.8 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, minimize or avoid adverse modification of critical habitat, and to develop additional information. NOAA Fisheries believes the following conservation recommendation is consistent with these obligations, and therefore should be carried out by FTA.

> The FTA should work with its partners, Metro and TriMet, and the City of Portland to provide stormwater treatment for water quality and water quantity in downtown Portland or other parts of the lower Willamette River watershed affected by stormwater. Although the downtown Portland segment of the proposed new rail alignment is within an already built corridor, existing stormwater facilities and treatments are not adequate to treat stormwater in the downtown sector. FTA can contribute to the City of Portland's ongoing wet weather program or develop alternative designs to treat stormwater.

To be kept informed of actions that benefit listed species or their habitats, NOAA Fisheries asks the FTA to notify us if it accomplishes any of these recommendations.

2.1.9 Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2 Incidental Take Statement

Section 9 of the ESA [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures. However, the incidental take statement included in this conference opinion does not become effective until NOAA Fisheries adopts the conference opinion as a biological opinion, after the listing is final.

2.2.1 Amount or Extent of the Take

The proposed action is reasonably certain to result in incidental take of listed steelhead and Chinook because surveys show the listed species occur in the action area, the proposed action will result in a short-term increase in turbidity, and fish salvage may be required. Anywhere from zero to twenty juvenile salmonids may be present in the project reach during the in-water

work. Five percent mortality is not uncommon for fish salvage activities. Consequently, two fish may die as a result of the fish salvage.

However, take associated with the habitat-related effects of actions such as increased turbidity are largely unquantifiable and are not expected to be measurable as long-term effects on populations. Therefore, NOAA Fisheries is unable to estimate a specific amount of incidental take attributable to those effects. In instances such as these, NOAA Fisheries designates the expected level of take as 'unquantifiable.' The extent of take will be limited to the action area, including the water column and streambed of Johnson Creek within the limits of the work area isolation and the downstream to the extent of visible turbidity resulting from construction activities, not to exceed 100 feet downstream from all construction activities.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion. The FTA will:

1. Avoid or minimize incidental take from in-water work by applying project specifications that avoid or minimize adverse effects to riparian and aquatic systems.

2. Avoid or minimize incidental take from streambank and upland activities including grading, plantings, staging, and the addition of impervious surface by applying project specifications that provide the greatest degree of ecological function in the watershed.

3. Complete a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

2.2.4 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the FTA must require that their partners, Metro and TriMet and/or their contractors comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (in-water activities), the FTA shall ensure that:

    a. Project Design. The design of this project must be reviewed to ensure that impacts to natural resources have been avoided, minimized and mitigated, and that the following overall project design conditions are met.
        i. Minimum area. Construction impacts will be confined to the minimum area necessary to complete the project.

ii. In-water work. All work below the bankfull elevation[1] of Johnson Creek will be completed within the in-water work period (June 1 through August 31);

iii. Work period extensions. Extensions of the in-water work period, including those for work outside the wetted perimeter of the river but below the ordinary high water mark must be approved in writing by biologists from NOAA Fisheries.

iv. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

v. Fish screens. Have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria[2] on each water intake used for project constructions, including pumps used to isolate an in-water work area. Screens for water diversions or intakes that will be used for irrigation, municipal, or industrial purposes, or any use besides project construction, are not authorized.

vi. Fish passage. Provide passage for any adult or juvenile salmonid species present in the project area during construction, unless otherwise approved in writing by NOAA Fisheries, and after construction for the life of the project.

b. Water Quality Plan, Pollution and Erosion Control Plan. Increased turbidity associated with project activities within or beside Johnson Creek, Veterans Creek and Phillips Creek is a concern. Prepare and carry out a pollution and erosion control plan to prevent increased turbidity caused by such activities. The plan must be available for inspection on request by FTA or NOAA Fisheries. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

i. The names and address of the party(s) responsible for accomplishment of the water quality and pollution and erosion control plan.

ii. Describe methods or BMPs that will be used to minimize turbidity increases as a result of project activities including access roads, equipment and material storage, construction sites, fueling operations, and staging areas.

iii. Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.

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[1] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such as average bank height, scour lines and vegetation limits.

[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria* for Pump Intakes (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydroweb.ferc.htm)

iv. A description of any regulated or hazardous products or materials that will be used, including procedures for inventory, storage, handling, and monitoring.

v. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.

vi. Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with minimum disturbance to the streambed and water quality.

c. Inspection of erosion controls. Inspection of erosion controls. During construction in upland and riparian areas, monitor shoreline turbidity and inspect all erosion controls daily, or more often as necessary, to ensure that erosion controls are working adequately.[3]

i. Erosion control devices will be inspected daily during the rainy season and weekly during the dry season until the site is permanently stabilized.

ii. If monitoring and inspection shows that the erosion controls are ineffective, mobilize work crews immediately, during working and off-hours, to make repairs, install replacements, or install additional controls as necessary.

iii. Erosion control measures will be judged ineffective when turbidity plumes are evident in waters occupied by listed salmonids during any part of the year. If soil erosion and sediment resulting from construction activities is not effectively controlled, the engineer will limit the amount of disturbed area to that which can be adequately controlled.

iv. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 5 inches (12 cm). Catch basins will be maintained so that no more than 6 inches (15 cm) of sediment depth accumulates within traps or sumps.

v. Sediment-laden water created by construction activity will be filtered before it leaves the right-of-way or enters any creek.

d. Isolation of in-water work area. If in-water work is required, isolation of the work area will be necessary. The work area will be isolated from the work area using inflatable bags, sandbags, sheet pilings, sediment curtains, or similar materials. All listed salmonids trapped within the isolation area will be removed and placed in the actively-flowing river using methods described in 1d.

[3] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 50 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

e. Capture and release. If in-water work area isolation is required, attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.
   i. The entire capture and release operation must be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.
   ii. Do not use electrofishing if water temperatures exceed 18ºC.
   iii. If electrofishing equipment is used to capture fish, comply with NOAA Fisheries' electrofishing guidelines.[4]
   iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.
   v. Transport fish in aerated buckets or tanks.
   vi. Release fish into a safe release site as quickly as possible, and as near as possible to capture sites.
   vii. Do not transfer ESA-listed fish to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.
   viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.
   ix. Allow NOAA Fisheries or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.

f. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows.
   i. Water quality. Design, build facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.
   ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.
   iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.
   iv. Drilling discharge. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.
      (1) All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.

[4] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

(2) Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.

(3) When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (*e.g.*, by pumping) to reduce turbidity when the sleeve is removed.

g. Piling installation. Install temporary and permanent pilings as follows.

i. Minimize the number and diameter of pilings, as appropriate, without reducing structural integrity.

ii. Repairs, upgrades, and replacement of existing pilings consistent with these terms and conditions are allowed.

iii. In addition to repairs, upgrades, and replacements of existing pilings, up to five single pilings or one dolphin consisting of three to five pilings may be added to an existing facility per in-water construction period.

iv. Drive each piling as follows to minimize the use of force and resulting sound pressure.

(1) Hollow steel pilings greater than 24 inches in diameter, and H-piles larger than designation HP24, are not authorized under this Opinion.

(2) When impact drivers will be used to install a pile, use the smallest driver and the minimum force necessary to complete the job. Use a drop hammer or a hydraulic impact hammer, whenever feasible and set the drop height to the minimum necessary to drive the piling.

(3) When using an impact hammer to drive or proof steel piles, one of the following sound attenuation devices will be used to reduce sound pressure levels by 20 decibels. Place a block of wood or other sound dampening material between the hammer and the piling being driven. If currents are 1.7 miles per hour or less, surround the piling being driven by an unconfined bubble curtain that will distribute small air bubbles around 100% of the piling perimeter for the full depth of the water column. If currents greater than 1.7 miles per hour, surround the piling being driven by a confined bubble curtain (*e.g.*, a bubble ring surrounded by a fabric or metal sleeve) that will distribute air bubbles around 100% of the piling perimeter for the full depth of the water column.

(4) Other sound attenuation devices as approved in writing by NOAA Fisheries.

h. Piling removal. If a temporary or permanent piling will be removed, the following conditions apply.

i. Dislodge the piling with a vibratory hammer.

ii. Once loose, place the piling onto the construction barge or other appropriate dry storage site.

iii. If a treated wood piling breaks during removal, either remove the stump by breaking or cutting 3 feet below the sediment surface or push the stump in to that depth, then cover it with a cap of clean substrate appropriate for the site.

iv. Fill the holes left by each piling with clean, native sediments, whenever feasible.

i. Treated wood. Use of lumber, pilings, or other wood products that are treated or preserved with pesticidal compounds (including, but not limited to, alkaline copper quaternary, ammoniacal copper arsenate, ammoniacal copper zinc arsenate, copper boron azole, chromated copper arsenate, copper naphthenate, creosote, and pentachlorophenol) may not be used below ordinary high water, or as part of an in-water or over-water structure, except as described below.

i. On-site storage. Treated wood shipped to the project area must be stored out of contact with standing water and wet soil, and protected from precipitation.

ii. Visual inspection. Each load and piece of treated wood must be visually inspected and rejected for use in or above aquatic environments if visible residues, bleeding of preservative, preservative-saturated sawdust, contaminated soil, or other matter is present.

iii. Pilings. Pilings treated with ammoniacal copper zinc arsenate, chromated copper arsenate, or creosote may installed below ordinary high water according to NOAA Fisheries' guidelines,[5] provided that no more than 50 piles are used. Note, also, that these guidelines do not apply to pilings treated with any other preservative, and do not authorize use of treated wood for any other purpose.

iv. Prefabrication and field preservative treatment. Use prefabrication to the extent feasible to ensure that cutting, drilling, and field preservative treatment is minimized. When field fabrication is necessary, all cutting and drilling of treated wood, and field preservative treatment of wood exposed by cutting and drilling, will occur above ordinary high water to minimize discharge of sawdust, drill shavings, excess preservative other debris in riparian or aquatic habitats. Use tarps, plastic tubs or similar devices to contain the bulk of any fabrication debris, and wipe off any excess field preservative.

v. Abrasion prevention. All treated wood structures, including pilings, must have design features to avoid or minimize impacts and abrasion by livestock, pedestrians, vehicles, vessels, floats, etc., to prevent the deposition of treated wood debris and dust in riparian or aquatic habitats.

[5] Letter from Steve Morris, National Marine Fisheries Service, to W.B. Paynter, Portland District, U.S. Army Corps of Engineers (December 9, 1998) (transmitting a document titled Position Document for the Use of Treated Wood in Areas within Oregon Occupied by Endangered Species Act Proposed and Listed Anadromous Fish Species, National Marine Fisheries Service, December 1998).

vi. Waterproof coating. Treated wood may be used to construct a bridge, over-water structure or and in-water structure, provided that all surfaces exposed to leaching by precipitation or overtopping waves are coated with a water-proof seal or barrier that will be maintained for the life of the project. Coatings and any paint-on field treatment must be carefully applied and contained to reduce contamination. Surfaces that are not exposed to precipitation or wave attack, such as parts of a timber bridge completely covered by the roadway wearing surface of the bridge deck, are exempt from this requirement.

vii. Debris Removal. Projects that require removal of treated wood must use the following precautions.

(1) Ensure that, to the extent feasible, no treated wood debris falls into the water. If treated wood debris does fall into the water, remove it immediately.

(2) After removal, place treated wood debris in an appropriate dry storage site until it can be removed from the project area. Do not leave treated wood construction debris in the water or stacked on the streambank.

(3) Evaluate treated wood construction debris removed during a project, including treated wood pilings, to ensure that debris is properly disposed of.

j. Preconstruction activity. Complete the following actions before significant[2] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales. When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

(2) An oil-absorbing, floating boom whenever surface water is present.

(3) Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

k. Temporary access roads and drilling pads. All temporary access roads and drilling pads will be constructed as follows.

i. Existing ways. Use existing roadways, travel paths, and drilling pads whenever possible, unless construction of a new way or drilling pad would result in less habitat take. When feasible, eliminate the need for an access road by walking a tracked drill or spider hoe to a survey site, or lower drilling equipment to a survey site using a crane.

ii. Steep slopes. Temporary roads or drilling pads built mid-slope or on slopes steeper than 30% are not authorized.

iii. Minimizing soil disturbance and compaction. Minimize soil disturbance and compaction whenever a new temporary road or drill pad is necessary within 150 feet[2] of a stream, water body or wetland by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NOAA Fisheries.

iv. Temporary stream crossings.

(1) Minimize the number of temporary stream crossings.

(2) Design temporary road crossings as follows.

- Survey and map any potential spawning habitat within 300 feet downstream from a proposed crossing.
- Do not place a stream crossing at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.
- Design the crossing to provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris, to prevent the diversion of streamflow out of the channel and down the road if the crossing fails). Vehicles and machinery will cross riparian areas and streams at right angles to the main channel wherever possible.

(3) Obliteration. When the project is complete, obliterate all temporary access roads that will not be in footprint of a new bridge or other permanent structure, stabilize the soil, and revegetate the site. Abandon and restore temporary roads in wet or flooded areas by the end of the in-water work period.

l. Heavy Equipment. Restrict use of heavy equipment as follows:

i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).

ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows.

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, water body or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 feet of any stream, water body or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a

record that is available for review on request by Corps or NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

m. Site preparation. Conserve native materials for site restoration.

i. If possible, leave native materials where they are found.

ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.

iii. Stockpile any large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

n. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

i. Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work unless construction will resume within four days.

ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

2. To implement reasonable and prudent measure #2 (streambank and upland activities), the FTA shall ensure that:

a Plantings. Prepare and carry out a site restoration plan as necessary to ensure that the streambank is stable and appropriately planted. Make the written plan available for inspection on request by the FTA or NOAA Fisheries.

i. Pesticides. Take of ESA-listed species caused by pesticide use is not included in this consultation.

ii. Fertilizer. Do not apply fertilizer (including fertilizers within the hydroseed mix) within 50 feet of any waterbody.

iii. Fencing. Install fencing as necessary to prevent access to revegetated sites by unauthorized persons or by equipment during future construction.

iv. Plan Contents. Include each of the following elements.

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the planting requirements, including providing and managing any financial assurances and monitoring necessary to ensure planting success.

(2) Performance standards. Use these standards to help design the plan and to assess whether the planting goals are met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.

(a) Bare soil spaces are small and well dispersed.

(b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basin, is absent or slight and local.

(c) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.

(d) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

(e) Vegetation structure is resulting in rooting throughout the available soil profile.

(f) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

(g) Streambanks have less than 5% exposed soils with margins anchored by deeply-rooted vegetation or coarse-grained alluvial debris.

(h) A continuous corridor of shrubs and trees provide shade for the entire streambank.

v. Long-term maintenance of the plants. The plan shall address roles and responsibilities associated with the long-term maintenance of the trees and shrubs. Because the trees and shrubs are being planted to mitigate the long-term effects of the new impervious surface, the plan must address maintaining the plants in perpetuity.

b. Stormwater management. Prepare and carry out a stormwater managment plan to address the new impervious surfaces that will be constructed as part of the proposed action. The plan can use a variety of BMPs to treat water quality and alterations to natural hydrology, such as bioswales, mechanical devices, use of pervious surfaces, plantings, etc. The plan must be available for inspection on request by FTA or NOAA Fisheries.

i. Plan contents. The goal is to avoid and minimize adverse effects due to the quantity and quality of stormwater runoff for the life of the project by maintaining or restoring natural runoff conditions. The plan will meet the following criteria and contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) A system of management practices and, if necessary, structural facilities, designed to complete the following functions.

(a) Minimize, disperse and infiltrate stormwater runoff onsite using sheetflow across permeable vegetated areas to the maximum extent possible without causing flooding,

erosion impacts, or long-term adverse effects to groundwater.

(b) Pretreat stormwater from pollution generating surfaces, including bridge decks, before infiltration or discharge into a freshwater system, as necessary to minimize any nonpoint source pollutant (*e.g.*, debris, sediment, nutrients, petroleum hydrocarbons, metals) likely to be present in the volume of runoff predicted from a 6-month, 24-hour storm.[6]

(c) Ensure that the duration of post project discharge matches the pre-developed discharge rates from 50% of the 2-year peak flow up to the 50-year peak flow.

(3) If engineered facilities are required to meet stormwater requirements, use a continuous rainfall/runoff model, if available for the project area, to calculate stormwater facility water quality and flow control rates.

(4) Use permeable pavements for load-bearing surfaces, including multiple-use trails, to the maximum extent feasible based on soil, slope, and traffic conditions.

(5) Install structural facilities outside wetlands or the riparian buffer area[7] whenever feasible, otherwise, provide compensatory mitigation to offset any long-term adverse effects.

(6) Document completion of the following activities according to a regular schedule for the operation, inspection and maintenance of all structural facilities and conveyance systems, in a log available for inspection on request by the Corps and NOAA Fisheries.

(a) Inspect and clean each facility as necessary to ensure that the design capacity is not exceeded, heavy sediment discharges are prevented, and whether improvements in operation and maintenance are needed.

(b) Promptly repair any deterioration threatening the effectiveness of any facility.

(c) Post and maintain a warning sign on or next to any storm drain inlet that says, as appropriate for the receiving water, 'Dump No Waste - Drains to Ground Water, Streams, or Lakes.'

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[6]A 6-month, 24-hour storm may be assumed to be 72% of the 2-year, 24-hour amount.

[7]For the purposes of this Opinion only, 'riparian buffer area' means land: (1) Within 150 feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100 feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system; and (3) within 50 feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system.

(d) Only dispose of sediment and liquid from any catch basin in an approved facility.

ii. Runoffs/discharge into a freshwater system. When stormwater runoff will be discharged directly into fresh surface water or a wetland, or indirectly through a conveyance system, the following requirements apply.

(1) Maintain natural drainage patterns and, whenever possible, ensure that discharges from the project site occur at the natural location.

(2) Use a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

(3) Stabilize any erodible elements of this system as necessary to prevent erosion.

(4) Do not divert surface water from, or increase discharge to, an existing wetland if that will cause a significant adverse effect to wetland hydrology, soils or vegetation.

(5) The velocity of discharge water released from an outfall or diffuser port may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the FTA shall ensure that:

a. Construction Monitoring. Provide NOAA Fisheries with a monitoring report within 30 days of completing project construction describing FTA's success meeting these terms and conditions. Information on the riparian planting is required 30 days after planting, and all other monitoring information is required 30 days after project demobilization. This report will consist of the following information.

i. Project identification.

ii. Photographic documentation of environmental conditions at the project site before, during and after project completion. Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.

iii. Isolation of in-water work area, capture and release.

(1) Supervisory fish biologist – name and address.

(2) Methods of work area isolation and take minimization.

(3) Stream conditions before, during and within one week after completion of work area isolation.

(4) Means of fish capture.

(5) Number of fish captured by species.

(6) Location and condition of all fish released.

(7) Any incidence of observed injury or mortality of listed species.

iv. Provide a narrative that briefly discusses project implementation and consistency with the terms and conditions, with special attention to turbidity, plantings, and implementation of mitigation. Submit a copy of this report to the Oregon State Habitat Office of NOAA Fisheries.

Director, Oregon State Habitat Office
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2004/00632
525 NE Oregon Street
Portland, OR 97232

b. Long-term Monitoring.
Plantings. A 5-year monitoring report that addresses planting success of the trees and shrubs planted along the Willamette River will be sent to NOAA Fisheries, Oregon State Habitat Office.

c. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360.418.4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrates" include sediment, hard bottom, structures underlying the waters, and

associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

Detailed descriptions and identifications of EFH for the groundfish species are found in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to *The Pacific Coast Groundfish Management Plan* (PFMC 1998a) and NOAA Fisheries' *Essential Fish Habitat for West Coast Groundfish Appendix* (Casillas *et al.* 1998). Detailed descriptions and identifications of EFH for the coastal pelagic species are found in Amendment 8 to the *Coastal Pelagic Species Fishery Management Plan* (PFMC 1998b). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). The assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Action

The proposed action is detailed above in section 1.2. This area has been designated as EFH for various life stages of Chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5, the proposed activities may result in detrimental short-term direct impacts to coho salmon in Johnson Creek. During project construction, increased turbidity may alter the behavior of the fish as they avoid the disturbance associated with earth-moving activities. Additionally, the handling of coho salmon that may be needed during fish salvage will result in short-term effects to the species. No long-term effects to habitat are expected because all new impervious surfaces will have treatment facilities and plantings to treat stormwater runoff for water quality and water quantity. Since Chinook salmon are not in the project area, effects to EFH habitat for Chinook salmon are not expected.

3.5 Conclusion

NOAA Fisheries believes that the proposed action may adversely affect the EFH for Pacific salmon species.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FTA and all of the terms and conditions contained in section 2.2.3 are applicable to EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations, except for those related to capture and release of individual fish during in-water work, and disposition of dead or injured specimens of ESA-listed species.

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) require the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FTA must reinitiate EFH consultation with NOAA Fisheries if the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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